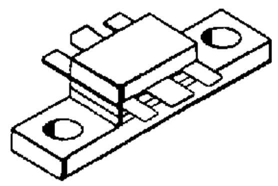
SGS-THOMSON MICROELECTRONICS

SD1391

RF & MICROWAVE TRANSISTORS UHF BASE STATION APPLICATIONS

PRELIMINARY DATA

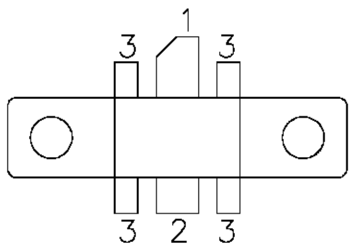
- 470 MHZ
- 24 VOLTS
- EFFICIENCY 50% MIN.
- P_{OUT} = 15 W WITH 11.0 dB MIN. GAIN
- CLASS AB
- COMMON EMITTER



.230 x .360 6LFL (M142)

ORDER CODE	BRANDING
SD1391	SD1391

PIN CONNECTION



1. Collector
2. Base
3. Emitter

DESCRIPTION

The SD1391 is a gold metallized NPN planar transistor using diffused emitter ballast resistors for reliability and ruggedness.

The SD1391 is specifically designed as a low power, high gain driver and can be operated in Class A, B or C.

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	48	V
V_{CEO}	Collector-Emitter Voltage	25	V
V_{EBO}	Emitter-Base Voltage	3.5	V
I_C	Collector Current	2.5	A
P_{DISS}	Power Dissipation (+25°C)	29	W
T_J	Junction Temperature	+200	°C
T_{STG}	Storage Temperature	– 65 to +150	°C

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	6.0	°C/W

ELECTRICAL SPECIFICATIONS (T_{case} = 25°C)

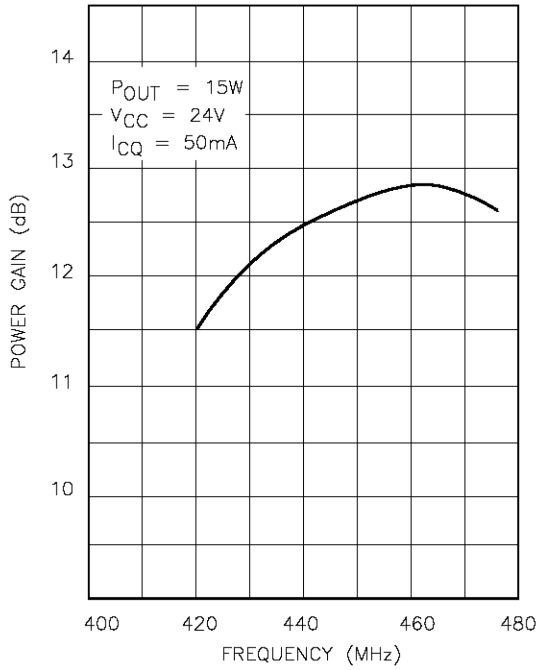
STATIC

Symbol	Test Conditions		Value			Unit
			Min.	Typ.	Max.	
BV_{CBO}	I_C = 50 mA	I_E = 0 mA	48	—	—	V
BV_{CEO}	I_C = 20 mA	I_B = 0 mA	25	—	—	V
BV_{EBO}	I_E = 5 mA	I_C = 0 mA	3.5	—	—	V
I_{CBO}	V_{CB} = 24 V	I_E = 0 mA	—	—	1.0	mA
h_{FE}	V_{CE} = 10 V	I_C = 0.1 A	10	—	100	—

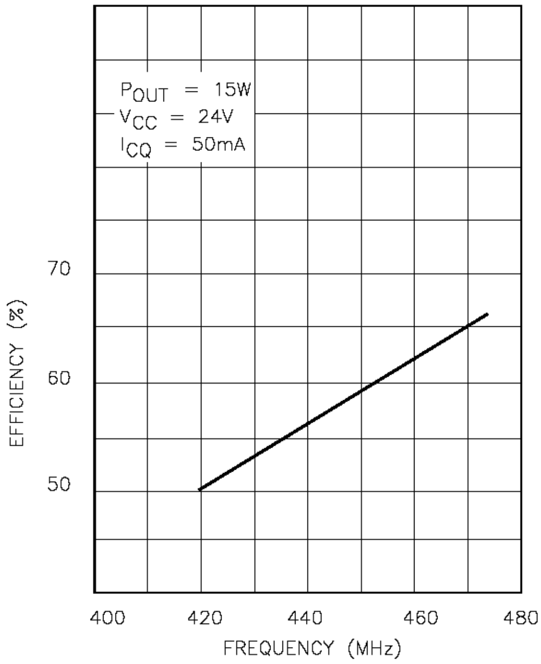
DYNAMIC

Symbol	Test Conditions				Value			Unit
					Min.	Typ.	Max.	
P_{OUT}	f = 470 MHz	P_{IN} = 6.3 W	V_{CC} = 24V	I_{CQ} = 50 mA	15	—	—	W
η_C	f = 470 MHz	P_{IN} = 6.3 W	V_{CC} = 24V	I_{CQ} = 50 mA	50	60		%
R_{TL}	f = 470 MHz	P_{IN} = 6.3 W	V_{CC} = 24V	I_{CQ} = 50 mA	10	—		dB
C_{OB}	f = 1 MHz	V_{CB} = 24 V			—	—	24	pF

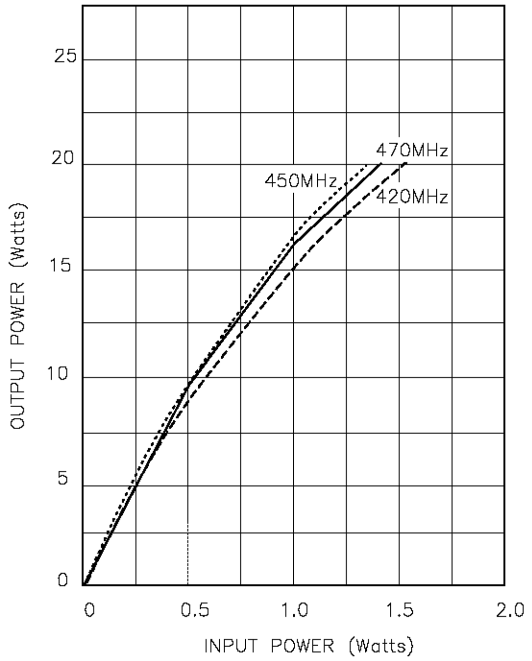
POWER GAIN vs FREQUENCY



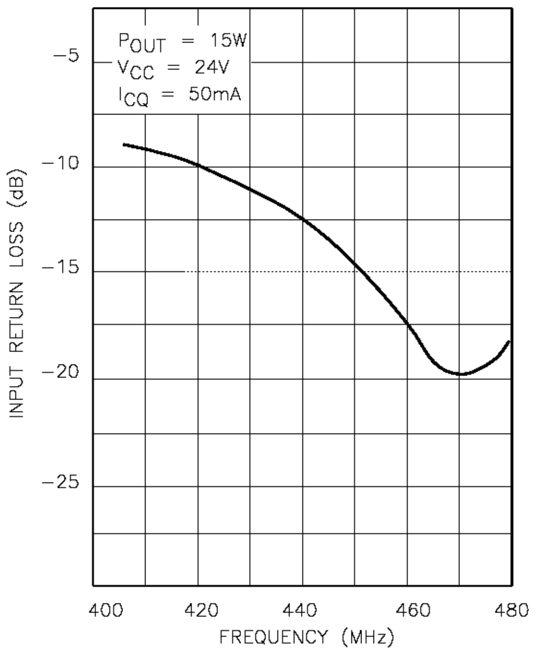
EFFICIENCY vs FREQUENCY



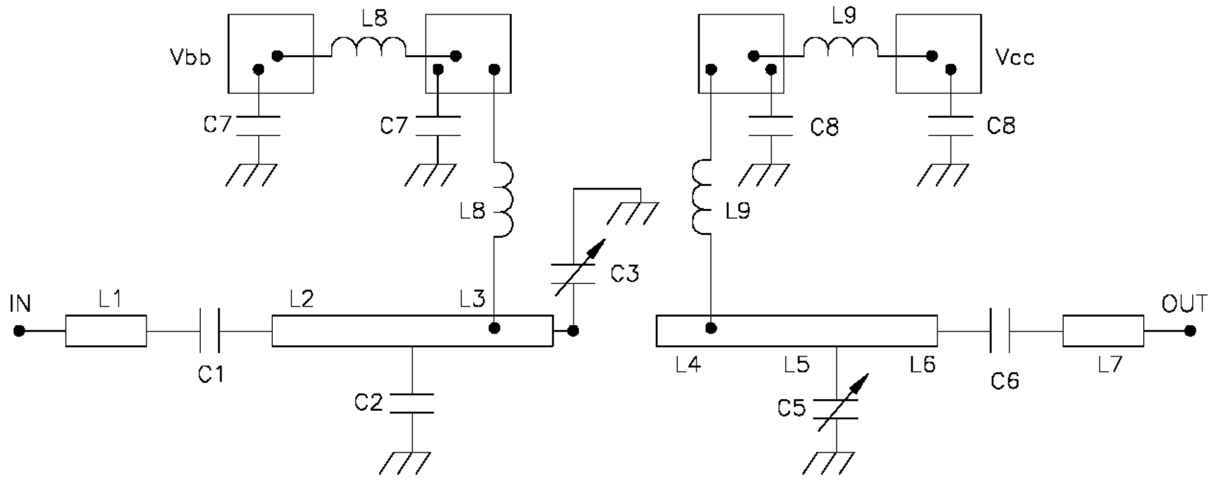
OUTPUT POWER vs INPUT POWER



INPUT RETURN LOSS vs FREQUENCY



TEST CIRCUIT

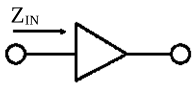


C1 :	2200pf Chip Capacitor	L1 :	50 ohms microstrip line, L = 6mm
C2 :	22pf Chip Capacitor + 2-10pf Trim Capacitor	L2 :	50 ohms microstrip line, L = 19mm
C3 :	2 x 33pf + 2-22pf Trim Capacitor	L3 :	50 ohms microstrip line, L = 25mm
		L4 :	50 ohms microstrip line, L = 14mm
C5 :	8.2pf + 2-10pf Trim Capacitor	L5 :	50 ohms microstrip line, L = 20mm
C6 :	330pf Chip Capacitor	L6 :	50 ohms microstrip line, L = 7.5mm
C7,C8	:1nF + 10nF + 100nF + 10mF	L7 :	50 ohms microstrip line, L = 8.5mm
		L8,L9 :	5 Turns, ID = 33mm, 0.5mm Wire diameter

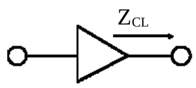
Board Material: Teflon H = 30mils, Er = 2.55

IMPEDANCE DATA

TYPICAL INPUT IMPEDANCE



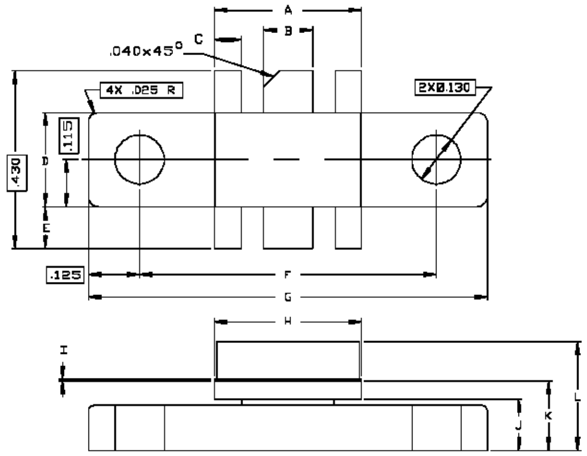
TYPICAL COLLECTOR LOAD IMPEDANCE



FREQ.	$Z_{IN}(\Omega)$	$Z_{CL}(\Omega)$
420 MHz	4.0 + j 2.2	7.2 + j 1.0
450 MHz	5.4 + j 3.9	6.8 + j 3.0
470 MHz	4.9 + j 5.7	6.6 + j 4.3

PACKAGE MECHANICAL DATA

Ref.: Dwg. No. 12-0142 rev. C
UDCS No. 1010968



SGS-THOMSON MICROELECTRONICS			CONT'D		
	MINIMUM Inches/mm	MAXIMUM Inches/mm		MINIMUM Inches/mm	MAXIMUM Inches/mm
A	.355/9,02	.365/9,27	K	.160/4,06	.180/4,57
B	.115/2,92	.125/3,18	L	.230/5,84	.260/6,60
C	.075/1,91	.085/2,16			
D	.225/5,72	.235/5,97			
E	.090/2,29	.110/2,79			
F	.720/18,29	.730/18,54			
G	.970/24,64	.980/24,89			
H	.355/9,02	.365/9,27			
I	.004/0,10	.006/0,15			
J	.120/3,05	.130/3,30			